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Oestrogenic Compounds *

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It has long been known that the ovaries are essential for the development and functions of the female genital organs. Knauer and Hablan (1900) showed that their action is mediated by ovarian hormones. Two types of ovarian hormones are now recognised. The follicular or oestrogenic hormones are associated more particularly with the developing Graäfian follicles while the corpus luteum secretes the hormone of the second type, progesterone. The follicular secretion is responsible for the growth and maintenance during adult life of the secondary sexual apparatus, uterus, vagina and breasts and for the secondary sex characteristics of the female, pigmentation, hair distribution, mating behaviour, etc. Hormones of both types are involved in the very complex endocrine system which regulates the cyclical changes in the sex organs, the oestrus cycle or heat in the lower animals, the menstrual cycle in primates, and the changes in pregnancy, parturition and lactation. In these processes species variation is extreme and generalisation impossible, but an example will make clear the type of mechanism involved.

The menstrual cycle in women appears to be initiated by the periodic activity of the anterior pituitary gland. This secretes a hormone (F.S.H.) which causes maturation of the follicles, stimulates secretion by the ovary of oestrogenic hormones and, in conjunction with a second hormone (L.H.) of the anterior pituitary, excites ovulation. The second hormone is responsible for the development from the ruptured follicle of the corpus luteum, which in its turn secretes progesterone and an oestrogenic hormone. The follicular secretion causes proliferation of the uterine endometrium, progesterone from the corpus luteum completes its development to a condition ripe for the embedding of the fertilised ovum. The subsequent train of events depends upon the fate of the ovum.

If fertilisation does not occur, the corpus luteum regresses after about ten days and the supply of hormones from that source is cut off. As a result the uterine endometrium breaks down and menstruation occurs.

When a fertilised and developing ovum is present in the uterus the corpus luteum does not regress but increases in size and activity. The placenta, when this develops, also provides a source of progesterone and oestrogenic hormones. The hormones of the corpus luteum and placenta are responsible for many of the subsequent features of pregnancy. At first the influence of progesterone is predominant though the presence of oestrogenic hormone at the same time is essential. Ovulation is inhibited, the uterus maintained in a condition favourable to the developing embryo and the development of the mammary glands stimulated. Progesterone desensitises the uterine muscle to oxytocin, a secretion of the posterior pituitary. At the end of pregnancy stimulation of the corpus luteum ceases and that organ regresses. At the same time an increase occurs in the production of oestrogenic hormones. These probably sensitise the uterine muscle to oxytocin and promote increased muscular activity which initiates labour.

Work on the oestrogenic hormones has been greatly facilitated by the development of the vaginal smear test for their activity. Distinct cyclical changes occur in the cellular composition of the vaginal wall of most animals. These changes correlate with the processes of follicular growth and ovulation, which are associated with oestrus or heat. In immature or castrated animals these changes do not occur but they can be induced by the administration of oestrogenic hormones. The changes induced in the vaginal smears of rats and mice are now widely used as a basis for the detection and evaluation of oestrogenic activity.

The first oestrogenic hormone to be obtained in a pure crystalline form was oestrone. It was isolated independently and at almost the same time (1929-1930) by Doisy, by Butenandt, and by Dingemanse, from the urine of pregnant women. A large number of compounds are now known to have oestrogenic activity. These compounds are of three classes. The first class comprises oestrogens of animal origin. All these are steroids, being chemically related to and probably derived in the body from cholesterol. A second class comprises compounds which, though chemically related to the natural oestrogens, are the products of partial syntheses and have never been isolated from the animal body. Lastly, there are known a large number of purely synthetic compounds, quite different from and in most cases much simpler than the steroid oestrogens in chemical structure, which nevertheless produce similar biological effects.

Compounds of the three classes are :—

I. Oestrone, oestradiol and oestriol. Emmenin (oestriol glyconuride).

II. Esters of oestradiol-oestradiol benzoate and propionate. Ethinyl oestradiol.

III. Stilboestrol and Hexoestrol. Triphenylethylene and Triphenylchloroethylene.

These compounds all produce effects which qualitatively are almost identical, but they differ greatly in the intensity and duration of their action. Oestradiol, stilboestrol, and hexoestrol have the lowest threshold doses, the triphenylethylenes the highest, while those

* Paper presented, in association with a demonstration on methods of estimation of oestrogenic activity, at a meeting of the Lancashire Division, N.V.M.A., held at Manchester on July 11th, 1941.

of the remaining compounds lie in between. The more active compounds, however, are short acting and if prolonged medication is required repeated doses must be given or, alternatively, tablets of the compounds may be implanted subcutaneously. The esters, benzoate or dipropionate, of oestradiol are somewhat longer acting but this property is most marked in the triphenylethylenes. With these the duration of action increases rapidly with increasing dosage and a single injection may produce effects of many months duration. Oestrogens are usually administered subcutaneously or intramuscularly in oil; the more readily available members of Classes I or II are comparatively inactive by mouth. The purely synthetic compounds of Class III are almost as active by mouth as by injection, though in the case of the long acting oestrogens the duration of action is not so prolonged after administration by the oral route.

The Therapeutic Applications of Oestrogenic Compounds

Oestrogens have been used with success in a variety of disorders of the reproductive system in women. Valuable results have also been obtained in animals and here the scope for further application is particularly wide. The more important uses of these compounds are considered in the following.

Menopausal Disorders.—Diminished ovarian secretion at the menopause leads to unpleasant symptoms such as flushing, headaches and other nervous disturbances. These are in most cases relieved by prolonged treatment with oestrogens. The symptoms of the artificial menopause induced by castration are similarly controlled.

Inflammation of the Vagina.—In senile and prepubertal vulvo-vaginitis oestrogens may bring relief and assist the recovery of the infected area by temporarily restoring the normal adult condition and bactericidal environment of the vagina.

Amenorrhoea.—Where amenorrhoea is due to ovarian deficiency leading to failure of the uterus to develop to normal size and sensitivity, treatment with oestrogen will often restore the normal menstrual rhythm.

Pregnancy.—Oestrogens increase the activity and reactivity to oxytocin of the uterine muscle. In some animals large doses will induce abortion or premature labour but in women the drug is much less effective. It is of definite value, however, in the treatment of uterine inertia, and for evacuating the uterus in cases of missed abortion or intra-uterine death it is considered the best method.

Lactation.—The oestrogenic hormones are concerned with the physiology of the mammary gland in two ways. In the absence or hypofunction of the ovaries they fail to develop but normal virginal growth can be stimulated by the administration of oestrogens. In some species progesterone also is required for full development to the stage of milk secretion, but this has been obtained with oestrogens alone in guinea-pigs, goats and more recently in cows. In the second place, oestrogens in sufficient quantity are antagonistic to the hormone of the anterior pituitary, prolactin, which is directly responsible for the initiation and maintenance of lactation. Oestrogenic compounds, in large doses, have proved effective in suppressing lactation both in human patients and in animals and triphenylchloroethylene seems to be of particular value in this respect.

Sterility.—Where sterility is due to the failure of ovulation the aim of therapy is to stimulate this event. Gonadotrophic hormones may be used but success has also been obtained by the technique known as oestrogen shock. A single large dose of an oestrogen at about the twelfth day of the human cycle may result in ovulation. It appears to act by producing a sudden inhibition and subsequent release of anterior pituitary gonadotrophin.

Similar results have also been obtained in the cow. Cows with functionless ovaries were caused to ovulate by a single dose of 5 g. of triphenylchloroethylene. The corpus luteum was expressed after a week and the cows went into normal heat in a further four or five days. Cows in silent heat may also be brought into visible heat by oestrogen treatment.

Where sterility is due to under-development of the vagina, uterus or tube, concentrated oestrogen therapy is an obvious measure.

RAT POISONS

In view of the increasing importance of meeting the rat menace with decisive measures, reference to an investigation carried out by the United States Planting Association of Malaya, reported in *The Analyst*, 1940, 460, is of interest. Rats were inoculated or fed with Liverpool virus, New Liverpool virus, Raxon, Ratinin, Vexterm rat biscuits, Ratbane and a number of chemical preparations. Some of these poison baits proved effective. Bread soaked in Ratinin (which contains an extract of red squill) was readily eaten by rats when first offered, but was refused when subsequently supplied. A commercial phosphorus paste, containing 2 per cent. of phosphorus and 98 per cent. of inert ingredients (glucose, honey, flour) was readily eaten by rats, after it had been spread on cubes of bread, and proved effective. Ratbane which consists of coarse, hard particles (possibly coarsely-ground corn), believed to be coated with zinc phosphide, proved very efficacious, although exposure diminished its attractiveness.

Four poison baits were prepared containing respectively 0·4 per cent. of thallium sulphate, 10 per cent. of sodium arsenite, 2 per cent. of arsenious oxide and 20 per cent. of barium carbonate. A dose of 2 gm. of any of the four baits may be considered a fatal one for local rats, since from 80 to 100 per cent. of the rats that ingested that amount died.

Comparative Tests

Thirty rats were placed in a pen and supplied with 30 gm. of each of the following baits: Vexterm biscuits (containing red squill), commercial phosphorus paste, thallium sulphate bait, sodium arsenite bait, arsenious oxide bait, barium carbonate bait. In one series of tests the rats were first starved for 24 hours, and in another series they were not starved but supplied with protein food in addition to the baits. After 24 hours, the baits were removed and weighed. Bread cubes with phosphorus paste proved the most attractive, and arsenious oxide and barium carbonate baits in the form of flour and bran balls were the least attractive. Thallium sulphate bait came second in both series of tests.—*Pharm. J.*

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Referring to the prospect that venison may be canned in Scotland, and that the commodity would soon be available for all classes of the community, the *Westmorland Gazette* suggests that the Lake district might prove a "happy hunting ground" where the deer have been numerous and destructive of recent years. In addition to helping the nation's food supply, it is said that the clearing of deer forests enables the ground to be transferred to agricultural purposes.

Barbiturates *

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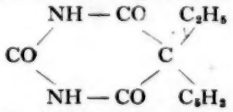
Although malonylurea or barbituric acid was first prepared in 1863 by Baeyer, the pharmacological action and clinical uses of its derivatives were not discovered until 1903 when Fischer and von Mering studied the action of 5·5-diethyl barbitolic acid (veronal or barbitone).

Chemistry

Barbitone has the following formula :—



It is a white insoluble powder, but it forms a sodium salt which is soluble in water. In general, this holds good for most barbiturates, which are frequently given by mouth in the insoluble form but when injected are required to be in the form of the sodium salt.

Pharmacology

An enormous number of derivatives of barbituric acid have been prepared since the introduction of Barbitone, and many of these derivatives have been used in human and veterinary medicine. When these different barbiturates are prepared, the following factors are important :—

(1) The ratio between the dose that produces hypnosis or anaesthesia and the lethal dose. This ratio indicates the margin of safety in the use of the drug and is determined by administering the drug to large numbers of animals in order to determine :

(*a*) The dose which produces hypnosis in 50 per cent. of the animals.

(*b*) The dose which kills 50 per cent. of the animals. This ratio, b/a, is known as the therapeutic index.

(2) The speed of onset of narcosis and its duration.

(3) The rate of recovery from hypnosis or anaesthesia, and the occurrence of any undesirable symptoms such as excitement, nausea, skin rashes, etc.

Barbiturates depress the central nervous system. In addition to the loss or clouding of consciousness, they cause depression in respiration, fall of blood pressure and temperature, intestinal paralysis, and decrease of urinary secretion. A combination of these effects, particularly the depression of respiration, may cause the death of the animal when large doses are used.

The action of the barbiturates can be antagonised by drugs which, in large doses, cause convulsions. The antagonism applies to the duration of hypnosis and to the lethal action. These drugs are strychnine, caffeine, camphor, leptazol (cardiazol), niketharnide (coramine), and picrotoxin. The last drug, picrotoxin, is easily the most effective antagonist.

* Paper presented, in association with a demonstration on the technique of continuous anasthesia by barbiturates, to the meeting of the Lancashire Division, N.V.M.A., held at Manchester, July 11th, 1941.

Classification

Pharmacologically, barbiturates can be classified as follows :—

Class	*Duration*	*Onset of hypnosis*	*M.L.D./ M.H.D.*	*Examples*
Long acting	+++++	Retarded	1·5 to 2·5	Barbitone Phenobarbitone Dial
Short acting	+++	Short	2·5 to 4	Nembutal Phanodorm Amytal M 1168 (I.C.I.)
Ultra-short acting	+	Hypnosis practically at once	4 to 8	Evipan Pentothal Thioethamyl M 732 (I.C.I.)

The last class of barbiturates are in common use as surgical anaesthetics. Their qualities of rapid induction of sleep, short duration of action, large therapeutic ratio, and the fact that they may be antagonised by picrotoxin have led to their preference to other anaesthetics by many clinicians.

Route of Administration

Oral administration of barbiturates is obviously most convenient, but when anaesthesia is required barbiturates are usually administered either intravenously or intraperitoneally because by these methods greater certainty of the time of onset of anaesthesia is achieved.

Techniques Used for Surgical Anaesthesia with Ultra-short acting Barbiturates

Two techniques are employed by the surgeon, depending on the duration of anaesthesia required.

When a short anaesthesia is wanted a single intravenous injection of the barbiturate is given to produce an anaesthesia of from 10 to 30 minutes.

If such a first injection is followed by a continuous injection of small quantities of the barbiturate, the blood concentration will be maintained at a constant level. A long anaesthesia is thus obtained which will allow the surgeon to perform operations lasting several hours. The quantity necessary per minute depends on the weight of the patient and the rate of detoxication of the barbiturate by the body.

The latter technique is based on the fact that a certain percentage of the quantity of a barbiturate present in the body is destroyed or excreted in every unit of time. Evipan is destroyed by rabbits at a rate of about one-twentyfifth of the total amount per minute ; after an injection of 25 mg./kg. it is necessary to inject 1 mg./kg. per minute in order to maintain the same level of anaesthesia. In mice and monkeys (*Macacus rhesus*) there is a slower rate of inactivation, about 1/35 per minute.

Fate of the Barbiturates

The mechanism of breakdown of the barbiturates is still unknown and probably every one has a different

fate in the body. Some, like barbitone and phenobarbitone, are excreted unchanged in the urine, but only about 60 per cent. is eliminated over a period of several days. Most of the barbiturates are broken down and in a few cases these breakdown products have been recovered from the urine. In the case of evipan small quantities of it have been recovered as its demethylated derivative, but the total recovered only accounts for about 10 per cent. of the quantity injected. This result suggests that demethylation is one of the metabolic changes but nothing is known about other possible ways of inactivation. There is some evidence, however, that non-hypnotic compounds are formed which increase the action of the original compound. For this reason, after two or three hours of continuous injection of evipan the level of anaesthesia increases and smaller quantities of drug are needed for maintaining the same depth of sleep.

Inactivation occurs in the liver. It is therefore inadvisable to use barbiturates as an anaesthetic for patients suffering from liver disorders.

In human surgery, a few preliminary clinical trials are sufficient to indicate whether a barbiturate will be of any use, but in veterinary work it is often found that a compound which acts as an ideal anaesthetic for one species is hopeless for another. Only a wide investigation of these compounds can tell us the possible uses of a new anaesthetic.

ABOUT BATS

A correspondent writes to *The Times* as follows: "'Blind as a bat' is a very silly phrase, as anyone will know who has handled one of these small creatures, with its dog-like face and dark eyes; or seen how expertly it flies by day, sometimes in bright sunlight, on those rare occasions when hunger brings it out before dusk falls.

"This happens, as a rule, only in chilly weather in spring or autumn, for the bats retire into hibernation during the winter, just as the swallows migrate to warmer climes, and it is a sudden drop in the temperature that catches either unawares. So if one sees a bat flying with the swallows in broad daylight one will know that the previous night was cold and frosty, too cold for moths and other insects to venture forth, and that the poor flittermouse is hungry.

"'Flittermouse' is surely a prettier name than 'bat' and very descriptive of the common sort that one sees flickering along the hedges and around our houses. Naturalists call this kind of bat the pipistrelle, but there is a much bigger bat (the noctule), which usually flies higher in the sky and has a more direct and bird-like flight, and another fairly common kind, principally seen hawking low over the surface of ponds and rivers, which is known as Daubenton's bat."

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Weekly Wisdom

"*. . . A little self-examination tells us pretty easily how deeply rooted in the mind is the fear of the new, and how simple it is when fear is afoot to block the path of the new idea by unbelief and call it scepticism, and by misunderstanding and call it suspended judgment. The only way to the serene sanity which is the scientific mind—but how difficult consistently to follow—is to give to every fresh idea its one intense moment of cool but imaginative attention before venturing to mark it for rejection or suspense, as alas nine times out of ten we must do.*"—Wilfred Trotter: The Commemoration of Great Men. [Collected Papers: Oxford Univ. Press, p. 28.]

Animals and Sleep

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Why Do Animals Sleep?

We think it is because in some cases they are tired from their physical exertions and nowadays largely from the quietness that in peace time may almost be described as "the silence of the night," and also because hours of darkness have existed during all their lives and a habit of sleeping them out has developed in them and produced, more or less, a somnolent effect upon them. Any entrance by man or woman into a stable or cow-house of sleeping and resting subjects, such as that induced by attendance on a sick or ailing animal, causes some of them to wake and get up and others to open their eyes and watch the movements and actions of the attendant.

It is a remarkable fact that very little or no consideration has been given in text-books to the therapeutic and restorative effects of a good sleep on the condition and welfare of the toiling horse and the milking and placid cow. We know how the pig that eats and sleeps grows fat, how undisturbed sheep put on flesh from quiet grazing and a few supplementary rations, and even how the dog that sleeps at night beats the noisy, restless, ill-trained individual that is always "up and doing."

Some animals, like human beings, carry out the axiom that "many are called but few get up," and seem to say to themselves "a little more sleep and a little more slumber and I shall still be able to fall in at the last moment."

What is the Inherent Cause of Sleep?

"One widely accepted is that sleep is accompanied by a diminution in volume and velocity of the blood in the brain and that this is the physical basis of sleep." ("Insomnia: How to Combat It," by Joseph Collins, M.D., author of "The Doctor Looks at Love and Life.")

Some have argued that sleep is a matter of *dendrites*, the harmonious flow of current contact being interrupted: when the current ceases to flow the result is sleep.

The chemical theory of sleep has a wide acceptance to-day. "It is based upon the assumption that during the waking hours by-products of the system's activities are developed and to some measure accumulated within the body, and that these, soporific in their effect, produces a sensation of tranquillity, drowsiness and sleep." (Collins.)

The latest theory of sleep which meets with wide acceptation both by physiologists and physicians is that "sleep is the result of inhibition from within of conditioned reflexes." This reflex was first described by Pavlov, the Russian physiologist, and later supported by Dr. John B. Watson and his followers. (Collins.) "Sleep is a resting state of consciousness which is facilitated and caused by cessation or interruption of all those stimuli that come from without and which reach the human organisation principally through the special senses."

It can hardly be supposed that in the wooing of sleep animals can bring to their aid the contempla-

tion, when lying in comfort, of sunlight and shadow passing over a field of waving corn, or of watching a train passing through a tunnel and looking to the mouth of the tunnel where sunshine shows, and concentrating on the tiny spot of light while feeling oneself getting farther and farther from it until it finally disappears.

With animals the suggestion seems to be that recognised environment, familiar surroundings, comfortable quarters, suitable bedding, and well known voices and movements constitute their home atmosphere, and are the chief factors in the production of happy and restorative sleep for them.

I had the writing of this article on "Animals and Sleep" in contemplation for many months, and before embarking on it had correspondence on the subject with three old friends of mine, all acute observers and life-time veterinary practitioners. These gentlemen are Mr. R. Hudson, of Retford, Mr. J. W. H. Masheter, of Newnham-on-Severn, and Mr. Edward Morgan, of Venezuela (now resident in Kent). We all agreed that animals close their eyes when asleep and young animals, as a rule, sleep sounder than adults. Corneas would go dry if animals did not close their eyes or blink. (Hudson.)

Mr. Masheter is very explicit and interesting on *the postures animals assume* when sleeping, and with his conclusions and observations I agree. He writes, "Cattle and sheep semi-recline on the right side almost flat as to the hindquarters but more or less upright as to the forequarters and with the head tucked in behind the shoulder. Lambs curl up. Pigs lie out flat on either side. Piglets do not curl up. Horses lie out flat on one or other side, but *oftenest* on the *right* side [a lesson for man—G. M.]. (Col. Fred Smith, in his "Veterinary Physiology," mentions that some horses go to sleep standing up. Probably this is more frequent in campaigns than in civilian stables. Horses that sleep standing up are a nuisance in stables, both to the owners and their veterinary surgeons.) Dogs, anyhow—flat, curled or even on the back; dogs dream. Birds, either perched, crouched or head under a wing. Poultry crouch and the neck is withdrawn between the shoulders. Bears hibernate."

Mr. Masheter also observes truly that he believes every living thing—animal or vegetable—sleeps regularly if only to keep healthy and fulfil its destiny.

The restorative effects of sleep in animals are tersely and therapeutically expressed by the quotation on sleep, "Tired Nature's sweet restorer." The brain rests, the kidneys secrete less urine, the liver secretes less bile, the heart beats less strongly and respirations are slower and shallower than in the waking state. The heart and the vital centres in the brain never sleep. A good supply of oxygen in the air increases the benefits of sleep.

The procuring of sleep as an aid to recovery in severe or prolonged illness is a serious necessity. Hence the use of narcotics, febrifuges, and sedatives.

A marked example of the benefit of sleep in hysteria of the dog is with us almost every day.

The Department of Agriculture for Scotland is making a survey of Scottish farming with the object of obtaining information on which to base the post-war agricultural policy.

THE VETERINARY RECORD

September 13th, 1941.

STUDENTS IN CONFERENCE

WE have received and are pleased to bring to the notice of our readers the report of a conference of students held recently at Liverpool. At this conference there was passed a number of resolutions all of which have some bearing on current veterinary problems.

It is a sign of health and vigour that future members of our profession should take the step of collecting representatives from the various teaching colleges and meet together to discuss measures calculated to ameliorate their own and our lots in our difficult calling. The meeting appears to have discussed the various proposals temperately and with most helpful moderation, and it gives us accordingly great pleasure to record these deliberations in the columns of *The Veterinary Record*. Particularly where the conference dealt with problems affecting the current curriculum are the appropriate resolutions worthy of study with a view to remedial action.

We also note that reference is made to the undignified nature of the graduation ceremonies at the veterinary schools, which, in the opinion of the conference, was hardly in keeping with the status of the profession. This would appear to be a view upon which appropriate action might be taken in the near future.

There is a love of symbolical ceremony inherent in the human race, and we, in these islands, are not a whit behind more volatile and demonstrative races in this regard. We have only to recall such state ceremonies as the recent Coronation, and those connected with Parliament, as well as the ritual attending upon the meetings of civic, university and guild assemblages to realize that considerable importance is attached to such ceremonial by all manner of ruling bodies. There have been many who scoffed at such observances as childish relics of the past, but the observance of ceremony goes deeper into human life than that. The modern tendency is to foster and, where they have fallen into abeyance, to restore them to their whilom splendour. They are very rightly regarded as a crystallisation of what is beautiful and worth while in the activities of a certain section of human activity, for the many to see and ponder upon—the outward and visible sign of the grace within.

We, too, as a profession are not without our ritual. The meetings of our Royal College are impressive to those who have witnessed its gatherings. Our own Association delights to gown and collar its President. We are inclined to agree that this is not enough, and that the suggestion of a graduation ceremony to welcome newcomers to a great and noble calling ought to be instituted with fitting ritual to accompany it.

CLINICAL COMMUNICATION

A Method of Treatment of Haematoma of the Dog's Ear

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Some little time ago, I had a spate of these cases to deal with, and my poor opinion of the usual methods of treatment was amply confirmed. I tried opening the cysts and bandaging under pressure, removing a large part of the skin over the cysts, suturing through the ear and so on, but recovery was delayed, and in all cases considerable wrinkling of the ear occurred and the animal's appearance was ruined.

After a good deal of thought, I decided to try a new method on the next case that came in. This happened to be a spaniel, with a nice big ear to work on. The method was as follows: I clipped all the hair off both surfaces of the ear, opened the haematoma and curetted its lining lightly under carefully aseptic conditions. When haemorrage was controlled, I placed a small pad of cotton wool over the incision and, holding the ear in an unwrinkled position, placed it in a light plaster cast—going all round the ear about four times with a 3-inch Cellona bandage. As the cast set, I bent the ear over the dog's head and applied considerable pressure until the plaster was hard and had shaped itself to the top of the dog's head. I then placed a bandage round to hold the ear in its cast firmly to the head. The idea was that the cast would give constant pressure and at the same time hold the ear in a normal position so that it could not wrinkle.

I left the cast on for about a week and, on removing it, found that the incision had healed by first intention and that there was not the slightest sign of thickening or wrinkling of the ear. There was a slight amount of surface necrosis where the ear was turned back, but this healed without treatment in a few days. I saw this dog about six months later and was unable to decide on which ear I had operated, as the hair had then grown again!

Since that time I have only had the opportunity of trying this treatment on two other cases—a bull terrier and an Aberdeen—both animals with "prick" ears. Both have made very satisfactory recoveries and now have normal ears carried in the normal way. Either could appear in the show ring.

I report this method in the hope that it will be tried on further cases and prove satisfactory to other practitioners.

A process for reducing beef to concentrated powder form has been demonstrated in Australia. "This may be the answer to Britain's meat shortage should this war be protracted," declared Mr. J. Cramsie, former Chairman of the Australian Meat Council. He produced a tin of powdered meat manufactured more than six years previously to illustrate the success of the experiment. The meat was in perfect condition. "In this form," he stated, "meat could be shipped by ordinary freight steamer or flying boat. It does not need refrigeration and would take up a fraction of the space which its own food value in carcase meat would occupy."—*Reuter.*

ABSTRACTS

[GRASS TETANY IN CATTLE. NOLAN, A. F., and HULL, F. E. (1941.) *Amer. J. vet. Res.* **2.** 41-45. (2 tables, 9 refs.).]

The authors discuss the losses from so-called grass tetany (*i.e.*, hypomagnesaemia) in central Kentucky, and refer in particular to the losses in the spring of 1940.

A brief, but somewhat incomplete, review of the literature on the subject is given at the beginning of the article and some of the theories of the causation of the disease are analysed. A description of the symptoms of the disease, as it occurs in Kentucky, shows that, clinically, it closely resembles the disease as encountered in other parts of the world. Twelve cases are then described in detail. The diagnosis of grass tetany on the clinical findings appears to have been in doubt in some of these cases, and this is reflected in the biochemical findings in the blood analyses. A proportion of the cases appear to have been associated with a hypocalcaemia and recovery occurred in such of these as received adequate doses of calcium gluconate.

Not all the cases of hypomagnesaemia were treated by the parenteral administration of magnesium salts, the dose employed being 50 c.c. of a 10 per cent. magnesium sulphate solution. The results obtained cannot be described as satisfactory, and this may have been due in some part to the comparatively small dose employed.

The authors draw no conclusions from their observations: this is perhaps inevitable in view of the character of the evidence submitted by them. The article serves to emphasise some of the difficulties of differential diagnosis on clinical signs and raises the question as to whether grass tetany is a clinical entity.

G. F. B.

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[SULPHAPYRIDINE IN THE TREATMENT OF CALF DIPHTHERIA (AND NECROTIC VAGINITIS). FARQUHARSON, J. (1940.) *J. Amer. vet. med. Ass.* **97.** 431-435.]

In the Rocky Mountain region the incidence of calf diphtheria is increasing and two distinct clinical forms are observed: that which affects the oral and pharyngeal cavities and that affecting the laryngeal cavity only. Farquharson believes that the term "calf diphtheria" should be reserved to describe the disease which affects only the laryngeal cavity. The condition is also observed in adult animals and is common in yearlings. It is uncertain whether *Fusiformis necrophorus* is the sole causative organism.

All forms of local treatment are of little value and sulphanilamide has given disappointing results. Eight animals afflicted with uncomplicated calf diphtheria and varying in age from six days to two and a half years were treated with sulphapyridine. To be effective a blood level of at least 5 mg. per cent. must be maintained. Treatment of all animals was commenced by administering a 5 per cent. solution of sulphapyridine sodium intravenously, the dose being 0·03 gm. (approximately ½ grain) per lb. bodyweight. Commencing on the same day and continuing for three to four days, a total dose of 1 grain per lb. bodyweight was given daily, divided into

three doses. Half the original dose was then given for three or four more days. In all animals there was a dramatic drop in temperature, the appetite returned in 24 hours and dyspnoea and cough were noticeably relieved in 8 to 24 hours—protrusion of the tongue and mouth breathing ceased. A white deposit was formed on the preputial or vulval tuft, due to the elimination of sulphapyridine. In one animal necrotic vaginitis had developed following calving; the entire vulva and vagina was a necrotic mass and straining was severe. The animal was treated with sulphapyridine and made a complete recovery.

The use of sulphapyridine is not without danger and toxic manifestations may occur; haematuria has been observed and sulphapyridine calculi may be formed.

J. F.

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[VETERINARY RADIOGRAPHY. Schnelle, G. B. (1940.) **I. & II.—THE HEAD.** *N. Amer. Vet.* **21.** 487-492 and 610-615;
III.—RICKETS AND OSTEOGENESIS IMPERFECTA. *Ibid.* **21.** 738-742.]

I. Veterinary radiography of the head of the dog, although not as highly specialised as in human medicine, can be of great diagnostic value. It must be remembered that as the entire thickness of the skull, together with its soft tissue contents, is projected on to one flat plane, radiographic anatomy gives a different view from that seen in the dissection room.

The question of restraint is very important, and the author is of the opinion that unless anaesthesia is used the position of the head cannot be controlled and the resulting radiograph will not give its full value. Sodium pentothal intravenously in the recognised dosage is recommended.

The most common position is dorso-ventral. Care should be taken to see that the median plane of the head is directly beneath the focal spot, and that this plane is at a 90° angle to the film. The result of this will be that the parts of the head will be in perfect symmetry. If there is a radiographic lesion a careful comparison of the normal and abnormal sides will reveal as much to the uninitiated as to the student of anatomy. In the lateral position it may be necessary to vary the degree of slope of the head in order to bring the lesion into profile to prevent it being obscured by other structures. The frontal sinuses are best seen when the base of the skull is placed on the casette and the dog's nose pointed at the tube.

II. This part deals with the radiographic picture as an aid to diagnosis. Suspected fractures should be taken with the central ray at a tangent to the fracture area so as to detect possible depressed fragments. Adenocarcinoma is the only type of intercranial tumour that can be observed radiographically. A diaphragm is essential for good results. After anaesthetisation a cisterna puncture is made (technique ref. Schnelle, G. B., *N. Amer. Vet.* **19.** 41-45) and air is injected. In most cases this type of tumour was seen to effect the naris and nasal septum only. Osteomalacia is evidenced as a clear delineation of the teeth of chalk-like density with the bony structures only faintly visible.

Other conditions referred to are congenital deformities, osteitis fibrosa, osteosarcoma, osteomyletis and dental sepsis.

III. Rickets can be diagnosed radiographically long before clinical symptoms appear, as has been noted when filming for suspected fracture. The X-ray picture of rickets is as follows. There is an abnormal gap at the junction of the shaft and epiphysis of long bones, particularly at the distal end of the radius and ulna, which indicates proliferation of cartilage without calcification. The extremities of bones show pressure or weight-bearing changes, with the result that the soft bone at these areas is crushed and increases in density. This appears as a white line which projects slightly beyond the normal contour of the bone. In the opinion of the author, apart from the usual medicinal measures adopted in the cure of rickets, large doses of vitamin D units should be given.

Osteogenesis imperfecta is described as a condition in which the bones are excessively fragile due to a congenital or hereditary cause. The long bones are shorter, there is very little cancellated tissue and the periosteal deposit is weak. Multiple fractures, without displacement or excessive callus formation, occur in the shafts of bones. The author gives no indication of the prevalence of this condition. All of these interesting articles are illustrated with prints taken from X-ray negatives.

C. W. O.

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[RESEARCHES ON TETANUS. VII.—(1) THE TIME REQUIRED FOR THE FIXATION OF A FATAL QUANTITY OF TETANUS TOXIN; (2) THE RETURN PASSAGE OF TOXIN BY WAY OF THE LYMPHATIC CAPILLARIES TO THE CARDIO-VASCULAR SYSTEM; (3) THE RETURN PASSAGE AS THE BASIS OF A METHOD FOR THE APPROXIMATE DETERMINATION OF THE VOLUME OF THE LYMPH IN THE CLOSED LYMPHATIC SYSTEM. Abel, J. J., Hampil, B., Jonas, A. F., and Chalian, W. (1938.) *Bull. J. Hopkins Hosp.* **62.** 522-563. (3 tables, 12 refs.).]
VIII.—AT WHAT POINT IN THE COURSE OF TETANUS DOES ANTI-TETANIC SERUM FAIL TO SAVE LIFE? (1938.) *Bull. J. Hopkins Hosp.* **62.** 610-633. (13 refs.).]

VII.—(1) When three lethal doses of toxin were injected intravenously into a dog, irreversible fixation of one lethal dose occurred in five to seven hours. The unbound toxin was stored in the blood and lymph in approximately equal amounts. The rapidity with which toxin was carried to the neurons of the central nervous system proves that the toxin was borne there by the blood vascular system and not by some mysterious route along the axis cylinders. The so-called "blood brain barrier" offered no protection to the motor cells of the brain and chord.

(2) Experimental procedures showed that toxiferous lymph returned to the blood system by way of the capillary network and not mainly by the large lymphatic trunks.

(3) By calculating the concentration of toxin in the lymph after the injection of known amounts of toxin, a good estimate of the lymph volume was obtained. It was found to be roughly equal to the blood volume.

VIII.—Anti-tetanic serum is powerless to mitigate or to abolish existing and clearly evident symptoms of descending tetanus in animals and human beings whose tissues have fixed one or more lethal doses of

toxin. There is, however, an incubation period between the time of fixation and the onset of symptoms, and serum given during this period may prevent the occurrence of symptoms even though many lethal doses of toxin have been fixed.

The instances of incipient tetanus which justify the hope of a favourable outcome are those which are in the incubative stage or those which are showing symptoms but which have not yet fixed a full lethal dose. Since this latter state cannot be differentiated on clinical grounds from those cases which have fixed one or more lethal doses, serum must be used on all cases.

Large doses of serum may also save life in cases of local tetanus, *e.g.*, trismus, paralysis of the mandible or one of the extremities in which the toxin is acting directly on the voluntary muscles and is distinct from its action on the central nervous system.

It should be realised that tetanus antiserum is not curative in the strict sense of the term, but we should utilise its prophylactic action to the full.

J. S. P.

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[ACTINOMYCOSIS. Tischhauser, L. A. (1940.) *N. Amer. Vet.* **21**. 90-91. (1 ref.).]

The author, in the course of this paper, points out that the veterinarian needs to have a practical, one-treatment cure for this condition. He finds that in tongue lesions (probably actinobacillosis) one injection of sodium iodide works like a charm but in other forms of the disease this line of treatment has frequently proved disappointing. In the case of bone lesions, failure is so frequent that immediate disposal of the animal is recommended. When lesions take the form of soft abscesses, particularly in the skin and underlying structures of the head and neck, these, if of appreciable size, are lanced and the pus squeezed out. A piece of gauze is then saturated with trichloride of antimony and forced into the cavity with a probe and left there. This pack, together with the "tumour," usually drops away in 8 to 12 days and 7 to 10 days later the lesion is practically healed, leaving hardly any trace. Probably 85 per cent. of all cases of actinomycosis lend themselves to this form of treatment which, in the author's experience, is the simplest and surest method he has yet tried.

G. D.

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[SWINE PRACTICE. Truax, E. R. (1941.) *J. Amer. vet. med. Ass.* **98**. 206-212.]

The author deals with swine practice in the United States corn belt, and rightly insists that in dealing with pigs a knowledge of feeding, vitamins and mineral elements is quite as important as a knowledge of diseases. The pig ailments mentioned are those common to all intensive-feeding districts. In dealing with Scour, the sow's ration should be reduced from a day or two before, to a week or ten days after farrowing, with a gradual increase. Sodium bicarbonate added to the feed or drinking water will check mild cases caused by dietary errors. Good results are also obtained from the use of one half-pound of copper sulphate or 4 oz. each of copper and iron sulphate dissolved in a gallon of water with caramel to colour. One pint in 20 galls. of slop, or ½ oz. per sow, is given. Formalin is also generally effective in 2 to 4 dram doses. Enteritis mixed bacterin is recommended for severe cases due to colon-typhoid organisms.

As an Anaemia preventive, copper and iron sulphate added to clean black dirt and placed in the pens daily is preferred to udder painting. In severe cases individual dosing with reduced iron, 5 grains daily, for four or five days, is said to be satisfactory.

For Hog Cholera vaccination the author prefers to immunise pigs at from five to eight weeks old. Unthrifty hogs should not be vaccinated, and common contraindications are anaemia, latent infections, pulmonary disease, enteritis, pox and parasites. When harmful conditions have been corrected, then a dose of serum in excess of label dose is given. Pigs of 35 or 40 lb. are given 1 c.c. per lb. For the virus, a portable refrigerator is recommended, as the virus is not stable. It is better to give more than the label dose than to give less. It is useless to vaccinate hogs with visible symptoms of cholera. In herds sick with cholera the serum dose should be increased 50 to 100 per cent.

Necrotic Enteritis develops primarily from nutritional deficiency, and infectious necrotic enteritis is a secondary complication caused by the invasion of the intestinal tract with *Salmonella cholerae-suis* organisms and others. Nicotinic acid is used for treatment, plus dietetic correction.

Swine Dysentery affects all ages, but younger pigs have least resistance. Control is based on sanitation, moving hogs to clean ground, flushing out concrete floors, cleaning utensils and isolation of newly-purchased pigs. Sodium chloride treatment has been used with good results. One gallon measure of salt is added to 50 galls. buttermilk with ground oats or barley added for palatability. Pigs are fed this mixture for four days, two days missed, and the treatment repeated. Salt can be mixed with charcoal and anise to disguise and flavour. There has been no evidence of salt poisoning, and the author believes that pigs may get a tolerance to salt if fed regularly. Ample water supply is imperative.

Swine Erysipelas is increasing in the corn belt. Serum is recommended in early stages. Hog cholera may also be present, and if the herd has not been immunised against the latter, anti-hog cholera serum and virus should be used. The use of virulent cultures *plus* serum for erysipelas is favourably mentioned, and appears to have only lately been introduced into Iowa. The prescribed dose of erysipelas serum must not be increased when used with virulent culture (reverse of cholera vaccination).

The author hopes the use of erysipelas virulent culture will be confined to qualified veterinarians as "too much death-dealing virus has already been scattered about this country by incompetent users of deadly viruses."

D. J. A.

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[CHRONIC FOCAL INTERSTITIAL HEPATITIS IN THE PIG. White, E. G. (1941.) *Vet. J.* **97**. 155-172.]

The author investigated the condition known among meat inspectors as "white spot liver," "milk spots" and cirrhosis. The incidence of the condition is believed to be about 10 per cent. in England and Wales. Two types of lesion are distinguished. In the so-called "white spot" form the whiteish foci have an indefinite boundary of thickened interlobular

tissue which gradually merges into the surrounding normal septa. A second type of lesion consists of "pearly" nodules up to 5 mm. in diameter, situated just beneath the liver capsule, and an entirely different lesion appearing as a spherical nodule up to the size of a pea or larger, and containing a brownish material, is also mentioned. The author reviews the literature dealing with so-called pig-liver cirrhosis, but entirely overlooks much work by British authors.

From the examination of 26 naturally occurring cases, the condition appears to be parasitic in origin. A second-stage ascaris larva was isolated from one lesion, whilst evidence of nematodes of comparable size and morphology was found in six other lesions. The view is expressed that the common "white-liver spot" is due to migrating ascaris larvae. Occasional parasites, during their migration, are held up in the liver and degenerate and the examination of large numbers of lesions at an early stage of their development may reveal the presence of larvae. From eight out of 15 larger lesions evidence was obtained of sections of flukes, probably immature *F. hepatica*, whilst a spherical cyst in one liver contained tape-worm hooks.

In view of the high incidence of this pig liver condition and to prevent pneumonia in young pigs due to migrating ascaris larvae, also because of the effect of the adult parasite in the intestine, it is suggested that further measures be adopted to control ascaris. The lesions described are well illustrated.

D. J. A.

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[AN IMPROVED STIMULATOR FOR OBTAINING SEMEN FROM SMALL MAMMALS. Benham, T. A., and Enders, P. K. (1941.) *N. Amer. Vet.* **22.** 300-301.]

[The collection of semen from small mammals cannot be effected by the same techniques as those used for the larger domesticated animals. Several types of electrical stimulator have been used for sheep, dogs, foxes, etc., but in practice most of these have fallen short of the claims made by their inventors. One of the major disadvantages of electric stimulators has been the discomfort which they inflict upon the animal at the time when the stimulus is applied.]

In this article is described a new type of stimulator, for which the authors claim that it secures the most efficient stimulation with the least discomfort and harm to the animal. This apparatus has (*a*) variable frequency, and (*b*) a circuit which makes it possible to control within limits the shape of the wave of the voltage applied to the animal. One of the special features of this apparatus is a 20-cycle alternating current, the cine-wave of which is so modified that the maximum voltage is applied 20 times a second in a sharp peak. As in other electrical stimulators, one electrode is placed in the rectum of the animal, whilst the other, in the form of a needle, is inserted into the lumbar muscles. [Those wishing more detailed information should consult the original paper, which is illustrated.—*Editor.*]

N. J. S.

A dog owner in Berkshire has been fined £50 for wasting 12 cwt. of bread by giving it to dogs. He explained that owing to transport difficulties he could not get rusks and horse flesh for his 130 greyhounds, and therefore got a baker to bake some roughbread for them.

REPORT

[**INDIA.** Report of the Veterinary Department, Central Provinces and Berar, 1940.]

An interesting feature of this report is the record of progress at the nine quarantine stations, the establishment of which along the provincial border was recorded in the 1939 report.

117,837 bovines were passed through these stations during the year against 41,499 during the previous year. Of these, 117,146 were vaccinated, for the most part with the goat tissue virus, and it is of interest that the income derived from the small vaccination fee of about 4½d. per head was more than sufficient to cover the whole cost of the stations. Thus it seems clear that large numbers of cattle could be permanently protected against rinderpest at very small cost, and that the establishment of such stations, throughout the country, for the vaccination of the more valuable cattle might prove a sound prophylactic measure within a province as well as a means of preventing the spread of disease by animals in transit.

Despite the protection given to animals passing along the main trade routes, severe outbreaks of rinderpest occurred during the year in the Chattisgarh district and the mortality was high. Chattisgarh is a district typical of certain parts of India in which conditions for cattle raising are very unsatisfactory, due largely to mineral deficiencies and gross overcrowding of grazing grounds, where severe outbreaks of contagious diseases periodically occur and are very difficult to control. Many of the cattle are so poor that they are hardly worth saving, but in a Hindu State slaughter would not in any case be permitted, and it seems likely that in present circumstances periodical heavy loss from disease will continue to occur in such areas.

The mortality from haemorrhagic septicaemia, blackwater and anthrax, though still high, was considerably less than during the previous year. Vaccination against these diseases was extensively practised and is reported to have been satisfactory. Systematic disease investigation by the Provincial Veterinary Investigation Officer was also continued and appears now to have become an established means of promoting the health of livestock in all the major Provinces and States of India.

The five Government farms which are maintained for the breeding of pedigree and improved stock continued to expand and seem likely to be of considerable value to the Province, if properly supported as a long-term policy. The attempt to establish a sheep breeding farm, however, met with a severe setback due to specific disease and parasitic infestation of various kinds.

Owing to lack of funds, no more veterinary hospitals were established during the year, but 12 outlying dispensaries were opened and are reported to have proved a successful means of extending veterinary aid to outlying districts.

Observations were continued during the year to determine the degree of severity of the reaction in plains cattle to rinderpest virus originally obtained from hill bulls, and a scheme for the investigation of poultry diseases has been submitted to the Agricultural Research Council for approval.

A. O.

First Conference of Veterinary Students

Representative Meeting at Liverpool

The first conference of veterinary students was held at Derby Hall, the University Hall of Residence for men, on July 29th and 30th, 1941. The conference was attended by representatives from each college, with the exception of Dublin, whose representatives were unfortunately unable to obtain travel permits. The officials of the conference, appointed by the Liverpool College, were: President, Mr. H. A. Clay; Secretary, Mr. A. Carlyle and Treasurer, Mr. M. Wynne.

The official representatives were: Mr. H. F. Aitken, Mr. A. I. Robertson (Royal (Dick) Veterinary College); Mr. N. H. Mathieson, Mr. F. P. Macleod (Glasgow Veterinary College); Mr. T. E. Gibson, Mr. A. A. Wilson (Liverpool University School of Veterinary Science), and Mr. C. D. Cooke and Mr. H. M. Millar (Royal Veterinary College). There were also present several members of the Liverpool College.

A preliminary meeting was held on July 28th, at which a constitution was drawn up and approved.

Before the conference was opened on July 29th, a short tour was made of the Liverpool University and the School of Veterinary Science.

Presidential Address

In opening the conference, the President extended a hearty welcome to the representatives, and expressed the hope that their stay in Liverpool would be a pleasant one.

He then went on to give a brief outline of the origin of the conference. During the Lent term, the Liverpool University Veterinary Society was approached to send delegates to the congress being held during the Easter vacation by the National Union of Students. It was felt (proceeded the President) that as we would be the only veterinary college represented, no useful purpose would be served, and that it would be more fruitful if a separate conference of veterinary students could be arranged. With this end in view, representatives of the Glasgow and Edinburgh Colleges were approached on the occasion of the Glasgow Veterinary College Ball. Encouraged by the result of these talks, letters were sent to all the veterinary colleges inviting their support. The replies were such that the Liverpool Veterinary Society went straight ahead with the organisation of the conference.

The President said that the objects of the conference were twofold. The first, and in his view the more important, was to promote a better understanding between the different colleges, and thus between the veterinary surgeons of the future. The more tangible object was the discussion of all problems affecting the student and the profession.

First Session

Subject—Private Practice

The subject was opened by Mr. Cooke, who began by considering in some detail the relationship of the practitioner and his client. In this respect he stressed the importance of cultivating an easy confident manner. He held that the description—"a good veterinary surgeon"—was bound up with personality as well as with professional competence. He considered that the status of the profession was improving, largely due to the more scientific approach to the subject.

It was his opinion that there had not been any appreciable decrease in veterinary practice owing to war conditions, except in a few blitzed localities, and he went on to consider the post-war outlook of the profession. He suggested that, owing to the systematic impoverishment of livestock on the Continent, this country would become the chief storehouse of pedigree stock, and that this would lead to a boom in the profession. He also thought that a feature of future development would be an increasing specialisation on the lines of particular animals rather than particular diseases.

Turning next to the question of the "quack," Mr. Cooke said that the danger from this source had been vastly overrated. With the increasing resistance of the client to humbug, the "quack" was rapidly dying out. He admitted that the animal welfare societies had incurred the displeasure of the profession in the past, but considered that in so far as they were primarily for the benefit of sick animals of the poor, they were an admirable institution, and were necessary to alleviate suffering. He decried the tendency of these bodies to be run on a purely commercial basis, and thought that effective measures should be taken to prevent them being used by those who could well afford to pay for treatment. This was unfair to both the veterinary surgeon and the poor client.

Finally, while condemning private advertisement as unethical, he said that a greater measure of publicity for the profession seemed desirable.

Discussion.—The general opinion was expressed that the position of the "quack" had been greatly underestimated, and that in reality he constituted a menace to the public and the profession. Additional and more drastic legislation was necessary to deal with this question, and in this connection the proposed amendment of the Veterinary Surgeons Act, 1881, was discussed. It was felt, however, that the elevation of the dignity of the profession would do a lot to remedy this trouble.

Second Session

Subject—State Service and Panel System

In leading the discussion, Mr. Gibson stated that the subject was complementary to private practice, and centred round preventive medicine. Attention had been focused on this issue as a result of report of the Survey Committee of the National Veterinary Medical Association, 1941. After summarising the provisions and recommendations of the report, Mr. Gibson said that of the considerable criticism to which it had been subjected, the most common was that the voluntary nature of the scheme rendered it ineffective. What was needed was a compulsory scheme administered by the Animal Health Division of the Ministry of Agriculture and Fisheries, with greatly increased facilities for research and laboratory diagnosis. While good work had been done in rendering the profession alive to its responsibilities in the control of disease, our ability to do this had been over-estimated, and further research was necessary before the scheme could be implemented.

With the increasing importance of preventive medicine, the question of how this was to be administered would have to be answered, and it seemed to be a choice between a State service and some form of centrally controlled panel system. The difficulties of administration of a self-sufficient panel system seemed to be insuperable, and the solution appeared to lie in the extension of the already existing State service so as to include these diseases, with, or without, a subsidiary panel system.

Dealing with the present State service, Mr. Gibson suggested that it should be extended to include the inspection of meat and milk, tasks which the profession is specially qualified to undertake.

Discussion.—The relative advantages of the two systems were discussed at some length. The fear was expressed by some members lest the independence of the private practitioner be imperilled by any system involving central control, but it was felt that such control was essential for effective action. It was suggested that the future development of veterinary medicine might lie along two main lines, preventive medicine administered through a State service, and the more general therapeutic medicine carried out by the practitioner, possibly through a panel system, and assisted by the provision of regional hospitals run by the co-operation of local practitioners. In discussing this last point, it was felt that a considerable obstacle to its achievement was the apathy of many practitioners to the welfare of the profession as a whole.

THIRD SESSION

Subject—Syllabus and Examinations

Mr. AITKEN, opening the discussion, dealt first with certain defects in the syllabus, such as the lack of sufficient instruction in special veterinary physiology, and the inadequacy of the courses in Animal Management, and Dietetics and Hygiene. He thought that these imperfections were of far less importance than the absence of an early agricultural knowledge, which, he suggested, might be obtained by practical farming experience prior to the commencement of the course proper.

He then went on to consider the examination system and brought forward the suggestion of the Edinburgh College, that the December examination of the Royal College of Veterinary Surgeons be replaced by a September examination. He pointed out that the chief advantage of this arrangement was that a student who was referred in summer, but succeeded in passing at the second attempt, could enter the next year unencumbered. It might seem hard that a student failing at September should have to wait a whole year before having another chance, but he was of opinion that any student who failed twice was in need of a further year's study before again presenting himself.

Mr. Aitken concluded his remarks by saying that there was a great need for increased grants and facilities for post-graduate studies.

Discussion.—There was a lengthy discussion on the points raised by Mr. Aitken. The position regarding the instruction in Veterinary Physiology was felt to be very unsatisfactory. It was most unfortunate that where an effort had been made to provide such special lectures, no one had been found qualified to undertake this task. The fault seemed to lie originally in the absence of research into the veterinary aspects of the subject, rather than in the syllabus.

The suggested alteration in the examination date was considered in some detail, but it was decided that any decision should be left until vacation practice had been considered.

Many aspects of the curriculum were discussed and the following points were generally agreed upon:—

1. That in view of the present conditions of practice, greater importance be given to the non-equine aspects of veterinary medicine and surgery.
2. That in the fourth year, parasitology was too comprehensive a course and could well be reduced to the more practical aspects of the subject as they affect the veterinary surgeon in this country
3. That more attention should be paid to the diseases and disorders of the reproductive system.
4. It was desirable that regular refresher courses be made available to practitioners in order that they may be kept informed of new developments in veterinary science.

FOURTH SESSION

Subject—Clinical Studies

The subject was introduced by Mr. MATHIESON, who began by stressing the paramount importance of vacation practice, as here alone could an insight be obtained into the general management of a practice. An attempt had been made both at Glasgow and Edinburgh to draw up a panel of practitioners willing to take students, in an effort to reduce the difficulties of students in obtaining practice. The schemes had both fallen through. He then suggested that a possible solution lay in the appointment of a "liaison officer" in each college to act as intermediary between the student and the practitioner. Such an officer would review the opportunities available for seeing practice, and endeavour to place students to the satisfaction of both student and practitioner.

Mr. Mathieson then went on to deal with the clinical studies in the colleges. He regarded college practices as undesirable on account of the friction which they necessarily created between the college and the local practitioners. The college hospital was more desirable, and for its effective working, full co-operation with the local practitioners was essential. The combined field station and hospital seemed to be the ideal solution, though a college hospital might still be needed for the small-animal clinic.

Discussion.—The difficulties of students wishing to see practice were confirmed by other representatives, and in this connection details were given by Mr. COOKE of a register compiled from information given by fourth and fifth year students at London. This gave details of the number of students taken, the type of practice seen, etc. He reported that this had proved very useful to students seeing practice this summer vacation.

Discussion followed on various aspects of vacation practice, and in this connection it was felt to be unfortunate that the present arrangement of the college sessions prevented the student from seeing practice during the busiest time of the year, from March to May, and that some alteration might be made to remedy this.

At the end of this session, reference was made to the undignified nature of the graduation ceremony at the veterinary colleges, which it was felt was hardly in keeping with the dignity of the profession.

CLOSING REMARKS

In closing the conference, the PRESIDENT said that it had been an unqualified success, and he hoped that as a result of this and future conferences more attention might be paid to student opinion. He had been very honoured to take the chair at this the first conference, and wished to thank the representatives for their support. He hoped that future conferences would be equally successful.

In replying to the President, Mr. MATHIESON expressed his appreciation of the opportunity afforded by the contacts established between the representatives of the different colleges, and his thanks for the hospitality extended to them during their stay in Liverpool. He would be very glad to welcome next year's conference to Glasgow.

Mr. COOKE and Mr. AITKEN endorsed these remarks on behalf of themselves and their colleagues.

Appendix A

RESOLUTIONS.

During the four sessions of the conference, the following resolutions were adopted.

1. "This conference feels that, in view of the widespread ignorance of the public as to the true position of the veterinary surgeon in the community, every effort should be made to educate the public in the facts of the training and status in society of the veterinary surgeon." *Adopted unanimously.*

2. "This conference, deploring the increase in unqualified practice, to the detriment of the public and the profession, and feeling that little is being done to prevent this, considers that the professional organisations should make every effort to fight this state of affairs through legislation preventing all unqualified practice, and the sale of patent medicines, sera, and other biological products directly to the public." *Adopted unanimously.*

3. "This conference, while welcoming the Report of the National Veterinary Medical Association Survey Committee 1941, feels that before an attempt is made to carry out the recommendations for the control of the diseases mentioned, further research should be undertaken, and practitioners better informed of the results obtained." *Adopted unanimously.*

4. "This conference considers that the prestige of the profession would be greatly increased if more facilities and grants were provided for research in veterinary medicine. Veterinary research workers filling such positions could contribute much to the extension of veterinary knowledge and the settlement of current problems." *Adopted unanimously.*

5. "This conference is of the opinion that, in view of his training and special knowledge of animal pathology and medicine, the veterinary surgeon is, in reality, the only person qualified to control the inspection and production of meat and milk, and feels that professional organisations should make every endeavour to

remedy the situation as it exists to-day, both in civil and military spheres." *Adopted unanimously.*

6. "This conference is of the opinion that, in view of the increasing importance of veterinary preventive medicine, the control of diseases of widespread economic importance is the care of the state, and that this is best carried out by the combination of a state service as it exists to-day with a state-controlled panel system." *For*, 6. *Against*, *nil*. *Abstentions*, 2.

7. "This conference considers that, in view of the existing apathy, every effort should be made by the Royal College of Veterinary Surgeons, the National Veterinary Medical Association, and the veterinary colleges, to further the active interest of the practitioner and student in all matters of veterinary sociology." *Adopted unanimously.*

8. "This conference considers that the subjects in the early years of the M.R.C.V.S. course are taught in too general a manner, and that more attention should be paid to the practical veterinary aspects in order that they may form a more satisfactory basis for the special veterinary subjects in the later years." *Adopted unanimously.*

9. "This conference considers that a regular system of refresher courses should be organised by the various colleges for the veterinary surgeon." *Adopted unanimously.*

10. "This conference considers that the subject of veterinary parasitology, as at present constituted, is too all-embracing, and that the subject could be confined to those parasites which are encountered by veterinary surgeons in this country. Those veterinary surgeons proceeding abroad should obtain the necessary knowledge by post-graduate studies." *For*, 6. *Against*, *nil*. *Abstentions*, 2.

11. "This conference is of the opinion that in the curriculum insufficient provision is made for instruction in the diseases and disorders of the reproductive system, and that the syllabus should be modified accordingly." *Adopted unanimously.*

12. "This conference recommends that By-law 74 of the Royal College of Veterinary Surgeons be fully implemented, and that to facilitate this, a register be drawn up by the various veterinary colleges of both practitioners and students, and that some form of liaison be established between them." *Adopted unanimously.*

13. "This conference recommends that the number of students seeing practice with any one veterinary surgeon shall not exceed two at any one time." *Adopted unanimously.*

14. "This conference deprecates the high charges made by some veterinary practitioners to students seeing practice, and recommends that the Royal College of Veterinary Surgeons pursue an enquiry into the whole question." *Adopted unanimously.*

15. "This conference recommends that the college sessions be rearranged so that students are enabled to see practice during the months of March, April and May." *Adopted unanimously.*

16. "This conference recommends that the December examination of the Royal College of Veterinary Surgeons be replaced by an examination held in September." *For*, 4, *Against*, 2, *Abstentions*, 2.

Appendix B

Constitution of the Veterinary Conference.

1. There shall be an annual conference of veterinary students of the colleges affiliated to the Royal College of Veterinary Surgeons.

2. The object of the conference shall be to discuss all matters of interest to veterinary students and the profession.

3. It shall be open to any college to suggest subjects for discussion to the organising college, which shall prepare a draft syllabus and submit it for approval to each college at least two months prior to the date of the conference.

4. The conference shall be held at each of the colleges in turn in the following order:—Liverpool, Glasgow, London, Edinburgh.

5. The conference shall be open to all veterinary students, and members of the Royal College of Veterinary Surgeons, but only two official representatives from each college shall be allowed to vote.

6. The President, Secretary, and Treasurer shall be appointed by the organising college.

7. The organisation of the conference shall be in the hands of the college at which it is being held.

8. The expenses of the conference shall be pooled, and shared equally by all the colleges.

9. The conference shall be held in the Easter Vacation.

10. A report of the conference shall be prepared, and sent to the Editorial Committee of the National Veterinary Medical Association, the Royal College of Veterinary Surgeons, and the colleges taking part. A brief report shall be sent to the Press.

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Sept. 17th.—Meeting of the Western Counties Division, N.V.M.A., at Guildhall, Exeter, 2 p.m.

Sept. 19th.—Meeting of the Lancashire Division, N.V.M.A., at the Victoria and Station Hotel, Preston, 2.15 p.m.

Sept. 19th.—Meeting of the Sussex Division, N.V.M.A., at Brighton, 2.30 p.m.

Sept. 19th.—Meeting of the Society of Veterinary Practitioners at Nottingham, 2.15 p.m.

Sept. 20th.—Meeting of the Scottish Branch, N.V.M.A., at the North British Hotel, Queen Street, Glasgow, 2.30 p.m.

Sept. 20th.—Entries for Miss Aleen Cust Veterinary Research Scholarship (R.C.V.S.).

Sept. 26th.—Meeting of the Mid-West Division, N.V.M.A., at Bath, 2.30 p.m.

Oct. 6th.—R.C.V.S. Committee Meetings, Royal Station Hotel, York.

Oct. 7th.—R.C.V.S. Committee Meetings, Royal Station Hotel, York.

Oct. 8th.—R.C.V.S. Council Meetings, Royal Station Hotel, York.

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Application for the Retention of Services of Registered Female Employees

It was reported in the supplement to our issue of August 30th that Council, N.V.M.A., at its last meeting, referred to the Finance and General Purposes Committee consideration of the question of the difficulty in which some practitioners might be placed by the withdrawal of some of their female staff in consequence of the registration of women between the ages of 19 and 31, under the Registration for Employment Order, 1941. In this connection, we are asked by the Committee to remind practitioners that it is open to a veterinary surgeon to write to the local Labour Exchange on behalf of any female employee whose services he wishes to retain and who has already registered. Alternatively, the letter can be addressed to the Special Interviewing Committee, by whom the registrant has to be interviewed before she is called up, and who give separate consideration to each case.

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Petrol Supplies for Veterinary Surgeons

Points to be Noted by Applicants

The Petroleum Board has issued instructions to Divisional Petroleum Officers that every consideration should be shown to the genuine demands of members of the veterinary profession for supplementary supplies of petrol. It is therefore incumbent upon every member of the profession to effect such economies in the use of petrol as may be possible. As a result of enquiries made by the Petroleum Board concerning the working arrangements between Divisional Petroleum Officers and Veterinary Liaison Officers, the Board has made certain suggestions which the Association has elaborated after consultation with the Veterinary Liaison Officers; these are now pub-

lished in the hope that members will read, mark, learn and inwardly digest them:—

Appeals for Supplementary Petrol

1. Appeals should be made by letter, *giving the D.P.T. Reference number* (an important point), and not on a further R.M.S.1 form.

2. Appeals should always be accompanied by the applicant's Registration book.

3. Some reason in support of appeals should be given, together with an estimate of approximate requirements for the remainder of the rationing period.

4. Envelopes should be clearly marked "Appeals—Veterinary Surgeon."

5. If appeal is made by telephone—and this should be done in an emergency—the appellant should ask to speak to the officer dealing with appeals from veterinary surgeons.

6. Appeals should be made while the applicant has *at least a week's supply left* and not delayed until the situation has become desperate.

7. It is most improper to ask by telephone that a dealer or garage be instructed to fill the tank of a car without coupons. Such action would be illegal.

In some Divisions, appeals are sent through the Veterinary Liaison Officer and this method has been found to simplify matters and to work well. In other areas, however, it is found that direct application to the Divisional Petroleum Officer, who, if necessary, can contact the Liaison Officer by telephone, helps to avoid delays. *Existing arrangements in all areas, however, still stand* unless it is found that they can be improved upon in any way.

Applications for Basic Petrol Ration

Members are urged to apply for their basic petrol ration at the time stated in order that there may be no delay in applying for the supplementary ration.

It is emphasised again that if veterinary surgeons will, for their part, co-operate in every way they can—taking note of the above suggestions—every effort will be made to give them priority facilities in the matter of petrol supplies.

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RESUMPTION OF GRANTS TO HEAVY HORSE SOCIETIES

The announcement by the Ministry of Agriculture and Fisheries that it has been decided to resume as from April 1st next the award of grants to heavy horse societies, will be received with relief, as a big step in the right direction, by all parties—including the N.V.M.A. through its official journal—who have been pressing for the restoration of the grants to horse-breeding societies since their regrettable suspension at the outbreak of war. The grants will be made at the same rates and subject to the same conditions as applied in 1939.

The grants for heavy horse breeding were first allocated in 1914-15 and, as a result of State support, the type of draught horse bred in this country had shown great improvement, while the light horse breeding societies had the same encouraging story to tell as the result of the payment of premiums for stallions to breeders. The breeding and exporting of horses from this country was a huge business, dependent on continued improvement of quality. Much more, however, than the re-institution of this feature of the industry after the cessation of hostilities was jeopardised by the grant suspension. The demand for the transport horse is increasing at home, while there is a growing market for horses for farm work, but in the absence of Government support the breed societies have been carrying on under grave difficulties and there has been a danger that the horse population of this country would be seriously depleted. All-round restoration of the grants is imperative and it is to be hoped that the valuable Government concession now announced is but an earnest of its intention to act accordingly.

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PERSONAL

Will.—Mr. James Martin, of Wrekin View, Bridge Road, Wellington, Salop, veterinary surgeon, who died on June 12th last, has left estate, "so far as can at present be ascertained," of the gross value of £12,078 10s. 10d., with net personalty £9,616 2s. 8d.

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ADMINISTRATION OF THE WASTE OF FOOD ORDER

"Appropriate Elasticity" in Cases of Feeding Human Food to Animals

The Secretary of Our Dumb Friends' League has made available for publication in our columns the following correspondence which has passed between his Society and the Ministry of Food on the important subject of the Waste of Food Order as applied to the feeding to animals of food fit for human consumption.

Following is the text of a letter addressed to the Ministry by Mr. Keith Robinson on July 26th: "I see by correspondence in *Our Dogs* and *The Veterinary Record*, that ailing dogs may not be given food fit for human consumption, nor may a veterinary surgeon prescribe such food, although he may know that the dog cannot recover without. In reply to enquiries to my Society, am I to say that His Majesty's Ministry see no alternative but to allow such dogs to die?"

On August 14th the Ministry wrote, in reply: "The Minister cannot undertake to interpret the Waste of Food Order, S.R. & O. 1424/1940, and each case must be determined on its merits by the particular Court concerned. For your information, however, the policy of the Minister has been to administer this Order in regard to the feeding to animals of human food with some appropriate elasticity and that proceedings have accordingly been confined to cases where such feeding was considered extravagant and unnecessary."

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LEGAL NOTES

Breach of Warranty "Right and Straight and Free from Mastitis."—At Sussex Assizes early in August Mr. Justice Humphreys had before him a case concerning the sale of six pedigree British Friesian cows which, it was alleged, were found after delivery to the purchaser to be suffering from streptococcal mastitis. They had (says *The Farmers' Weekly*, in its report of the proceedings) been sold under a warranty that they were all right and straight and free from mastitis, but the Judge held that there had been a breach of warranty and gave judgment for the purchaser. The plaintiff was Ernest Smith, Sircourt Farm, Denchworth, Berks, who sued Ronald William Hawken, of Beals Barn Farm, Cousley Wood, Wadhurst, Sussex, for the balance, £316 13s. 4d. alleged to be due on the purchase price of the cows.

For the defendant it was alleged that he purchased the six cows on the guarantee of the plaintiff that they were all right and free from mastitis, and that if he found any fault with any of the animals, they were to be returned. The cows were transported on January 10th from plaintiff's farm to defendant's farm in a *de luxe* horse box with six stalls.

Counsel for defence added that plaintiff alleged that the cows contracted mastitis due to being transported in the evening of a cold day from warm cow sheds. Actually a horse box, warm and free from draught, was used. Four days after the cows' arrival at defendant's

farm the animals were examined, and five of them found to be suffering from streptococcal mastitis.

Defendant, in evidence, said the cows were no longer used in a dairy herd, and he valued them for slaughter at £20.

VETERINARY EVIDENCE

Mr. J. D. Paterson, M.R.C.V.S., of the Veterinary Department, South-Eastern Agricultural College, Wye, Kent, said mastitis was a contagious disease and that streptococcal mastitis was the most contagious. In his opinion, four of the cows had been affected for some time. A chill in itself could not bring about the disease.

Mr. David Campbell, M.R.C.V.S., said he examined the cows on January 24th, and in his opinion they had been affected with the disease for some time.

For the plaintiff, Dr. Arthur Wallis Stableforth, Senior Research Officer in charge of the Bacteriological Department at the Ministry of Agriculture, New Haw, Weybridge, said for eight years he had studied bovine mastitis. In his opinion it was possible for a cow to have a small number of mastitis germs without its milk being affected. Thirty per cent. of the cows in the country were so affected; most herds would have some cows affected, others none, and again others would have 80 per cent.

Counsel: Take a herd of 100 cows carrying this germ, how many cows would you expect to have their usefulness impaired?

Witness: Over a year, 30 per cent. and over five years 80 per cent.

Plaintiff said he did not agree to take any cows back if defendant was not satisfied with them. His was a T.T. herd and it would not have been possible for him to take the cows back into his herd once they had left his farm, until they had been tested again. He told defendant's bailiff that he never had any mastitis in his herds, and that the cows being purchased were right and straight. He advised defendant not to take the cows away on the day in question because it was bitterly cold.

Mr. T. A. R. Fieldgate, M.R.C.V.S., said that since 1930 he had attended plaintiff's herds of cows and at no time did he find any signs of mastitis.

Mr. Justice Humphreys found there had been a breach of warranty that had destroyed the value of the cows to defendant. In his opinion defendant was not liable to pay any more for the cows than he had already paid. The judge also referred to the obvious integrity of plaintiff, who, to his belief, sold the cows as right and straight. The judge found for the defendant in the claim by plaintiff, and also for defendant in his counterclaim, amounting to £49 7s. 6d. Costs were allowed defendant in the claim and counterclaim.

Fined for Graded Animal.—At Bolton Borough Court, recently, failure to notify a tuberculous cow cost Joseph Houghton, a farmer, £5 and costs, although grading had taken place before detection of the animal by a veterinary surgeon at the Thynne Street collecting centre. Sputum examination confirmed Mr. John Adamson's opinion: the animal was an unthrifty beast and had a chronic cough.

For the defence, Mr. Sayer, solicitor, stressed the fact that defendant, of excellent character, had never had a previous complaint against him in his long experience with animals. A broadcast appeal was made by the Ministry of Food for farmers to cull their herds and send in all inferior and unthrifty animals, and Houghton responded to it. At the mart, it was examined by the agents of the Ministry, who had not discovered any definite clinical signs of the disease. It was, therefore, graded and became the property of the Ministry.

Defendant, he emphasised, had no reason for believing that the cow was tuberculous, and until he had reason to suspect such a thing he was under no obligation to report. Had he known he certainly would have reported at once.

Houghton confirmed this in evidence. John Halstead, Smithills, district chairman of auctioneers under the Ministry of Food, said the cow was a good weight for a small animal of its class, and he and his co-officials did not find any evidence of a cough. If they had it would have been rejected as unfit for grading.

CLEAN MILK CAMPAIGN: DECISIONS IN THE COURTS

When it was reported to Glamorgan Diseases of Animals Committee that justices in several cases recently had imposed heavy fines on farmers who failed to notify the suspected presence of tuberculosis in cows, the Chairman, Alderman W. Degwel Thomas, said he was very glad to see such tangible results of his appeal at the last meeting—that justices should help in the campaign for clean milk. "Never was it more necessary than now," he said, "to assure to the public, especially the children, that the food supplies that are available to them should bring them health and strength and not the germs of disease."

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"PEDIGREE PLAYS ITS PART"

"If it were needed, there is abundant evidence that, despite the difficulties created by the war, breed societies are doing everything to keep our pedigree stock up to its world-renowned standard," observes *The Farmer and Stockbreeder* in a leading article published, under the above heading, in its issue of August 19th. The article proceeds: "We hear of milk yields being maintained, of the improvement in type and increase in utility of our flocks, and of the persistent and successful efforts of pig and poultry breeders to maintain their herds and flocks. And heavy horse breeders, who have for long met with discouragement and disappointment, are getting reward for their faith and determination.

"All this, perhaps, is no more than might be expected from our breeders, since it is just another indication—not always realised and appreciated by the industrial employer or worker—of the British will to win through. Home-grown foods and the more rigid application of practical, as opposed to theoretical, ideals of breeding, are producing a type of animal which may well prove essential to the rehabilitation of the dairy industry of the whole Eastern hemisphere.

"But, in the meantime, much could be done in the matter of exports. In our pedigree flocks and herds we have a great potential source of trade with overseas countries. The Government has encouraged exports of manufactured goods. It has done nothing to stimulate trade in pedigree stock."

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AGRICULTURAL RESEARCH SCHOLARSHIPS, AND STUDENTSHIPS FOR RESEARCH IN ANIMAL HEALTH

It is notified that, on the recommendation of the Agricultural Research Council, the following awards of one Agricultural Research Scholarship and two Studentships for Research in Animal Health have been made by the Ministry of Agriculture and Fisheries, and the Department of Agriculture for Scotland:—

H. E. Davenport, B.SC., of University College, Nottingham, a Research Scholarship in Helminthology.

F. Alexander, M.R.C.V.S., of the Royal (Dick) Veterinary College, Edinburgh, a Studentship for Research in Animal Health.

A. McDiarmid, M.R.C.V.S., of the Royal (Dick) Veterinary College, Edinburgh, a Studentship for Research in Animal Health.

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The first of several interesting meetings arranged by the Farmers' Club for the winter months will be held at the Royal Empire Society's premises (entrance in Craven Street, W.C.2) on Tuesday next, at 3 p.m., when discussion of the subject "The Maintenance of Land Fertility in War-time" will be opened by Mr. W. S. Mansfield, M.A.

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A cheque for £15,000 from the Red Cross Agriculture Fund brings the total contributed by farming interests in England and Wales to £600,000. This sum has been raised since May, 1940.